Emerging challenges of Innovation Systems in Maghreb Countries

Prof. Abdelkader Djeflat
Chairman, the Maghtech Network

Structure of presentation

- Innovation performances and ranking in Maghreb countries
- Innovation and innovation support in Maghreb countries: recent trends
- Innovation systems: major challenges
- Prospects : Innovation Climate in maghreb countries

Characteristics : common features

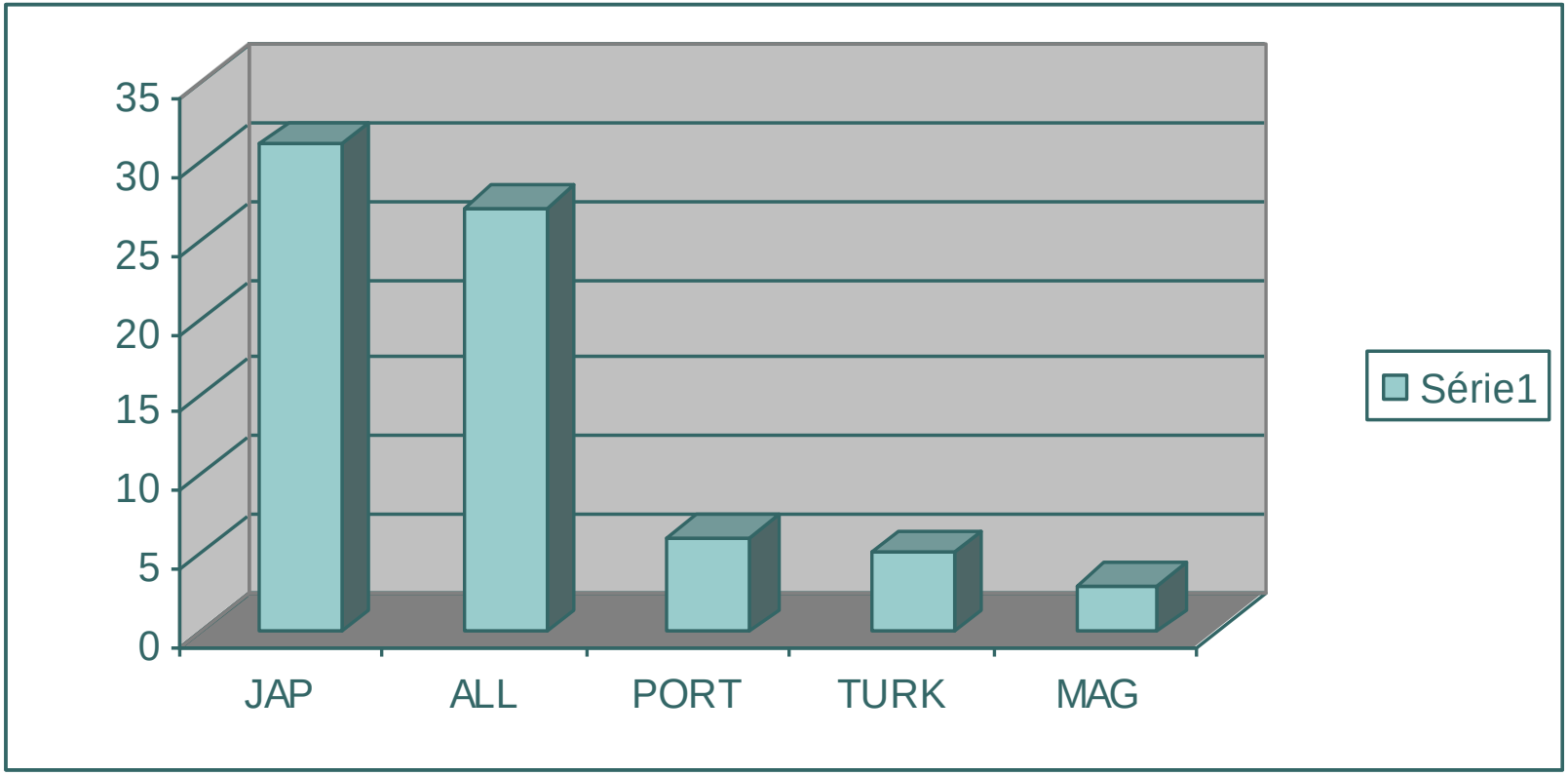
- Algeria, Tunisia, Morocco, Mauritania & Libya
- Strong colonial legagy
- French speaking and culture dominant
- EU represents 67% of all imports
- Various industrial expriences : heavy to light industry

1.Innovation in Maghreb countries (MC): performances and ranking

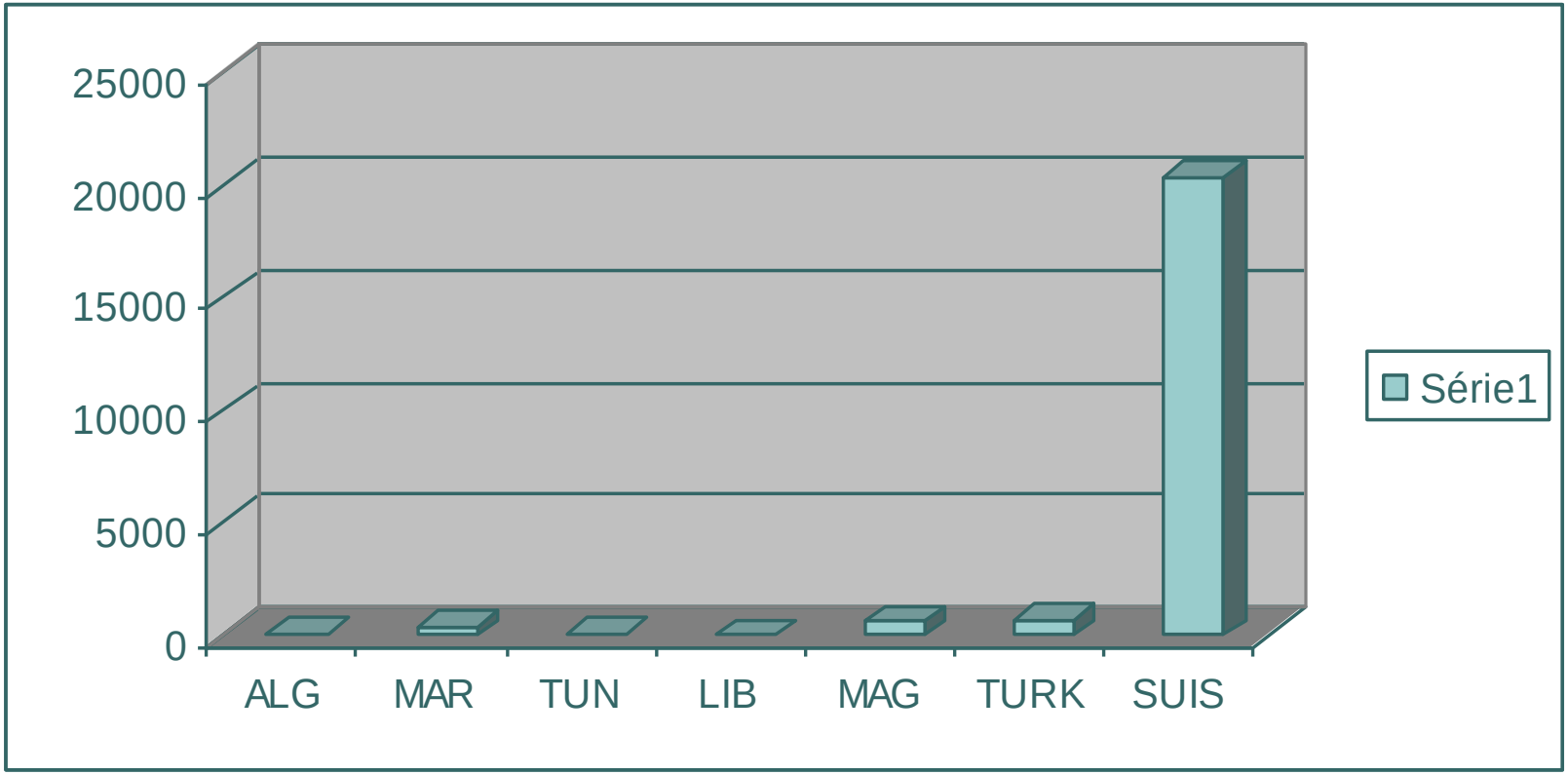
Indicator issues :

- Still highly debatted and controversial issue
- Classical inputs: number of researchers, R&D spending as % GDP
- Classical outputs: patents, articles in scientific journals, share of high tech. Exports, royalties received,

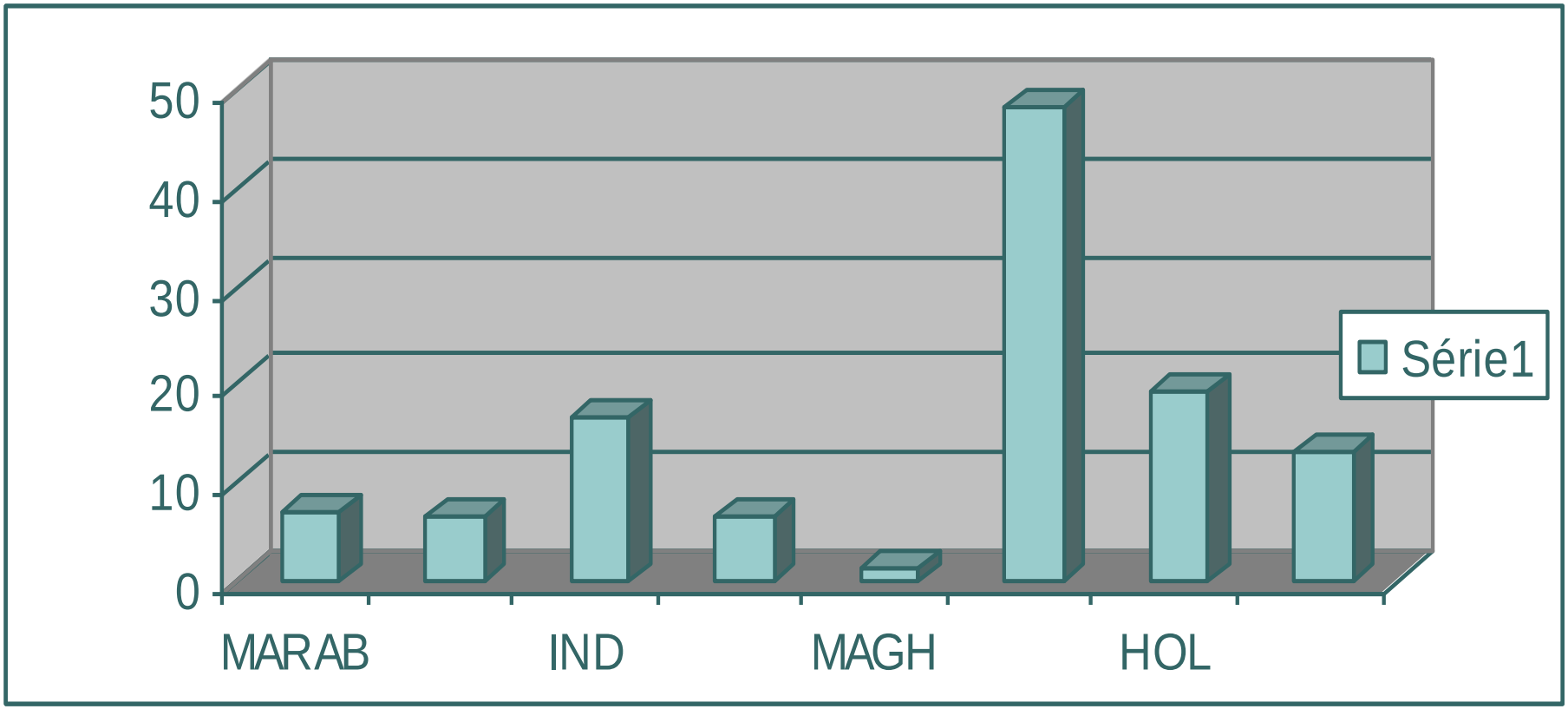
R&D expenses as % of GDP



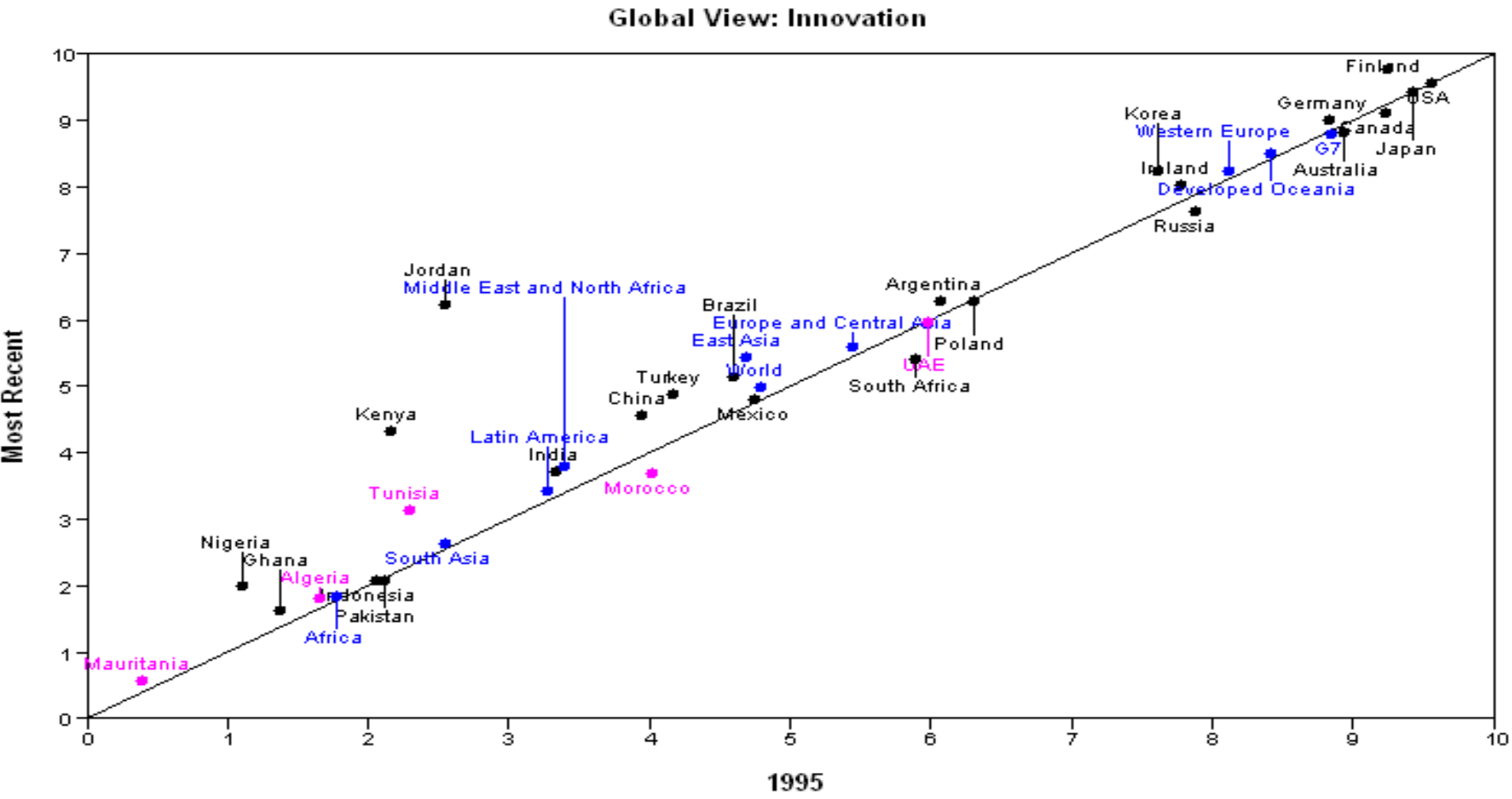
Patents (1995)



Publications



Global positionning on innovation of MC countries : individual ratings (WBI)



2. Innovation System supports in Maghreb countries:

Recent trends and current problems

Institutionnal

- Important Institutional support and several schemes: PNRI programme national de recherche et d'innovation (Tunisia) et grands programmes d'essaimage des grands groupes (Morocco) , 1998 law (Algéria) and Commissions, research agencies (ANDRU, ANDRS, ANVREDET) and centres (10 research centres)

- Spécial Programmes and incentive schemes:
  - « Innovation entreprise compétitiveness (Morocco)
  - programmes d'encouragement à la recherche et à l'innovation (Tunisia),
  - Research grants (Algéria),
  - Innovation grants programme (Mauritania) Incubators, technopoles, science et technological parks

- Education reforms in 1999 oriented towards quality and S&T reinforcement in Mauritania, education commission (Algeria)

Increased spending on R&D

- **Significant increase in R&D expenses as % of GDP since 2002: 0,79% (Morocco), 0,7% (Algeria) 1% (tunisie)**
- **Increased mobilisation of researchers through incentive schemes: (ex Morocco: financial support to researchers increased of 98%, and research grant 30% in the last 2 years,)**
- **Public spending increased 113% in the last 2 years (Morocco)**
- **Private spendings increased from de 6% en 1998/1999 à 17% en 2000/2001 (Morocco)**
- 6026 projets mobilising 15994 researchers mobilised **145,38 milliards DA in Algeria following the 1998 law**

Increased spending on education

- Education spending (% PIB): 5,9 % in mauritania (2003), 5.5% in Morocco (2002)
- Tertiary enrolment : 10.5% (Morocco) , 14.9% (Algeria), 15% in Tunisia

Financing innovation

- Venture capital market slowly emerging :

  Finalep (Algeria)

  SICARS (Tunisia)

  Moussahama (Morocco)

Problems and difficulties

Problems & difficulties in R&D

- The impact is not easily visible
- Difficult linkages: university-industry
- Difficulty felt by local entreprises to innovate: critical size, financing, competencies & know-how, etc.
- Research disconnected from domestic needs and national realities Contraintes administratives : lack of coordination
- Lack of monitoring and evaluation of research projects and programmes
- Difficult research environment : research laboratories
- 90% of research funding come from state budgte against 30% only in OECD countries
- Export of high tech. as percentage of manufactured exports are still negligible: Algérie 4%, Tunisie 4%, Maroc 11%, (UNDP 2002)
- Familial & informal financing still dominant : up to 65% of the capital for small entreprise starting business; banking tradition has a long way to go.

Problems of education

- School drop out too high (500 000/yr in Algeria, 40% of a class age during the 9yrs of basic education in Tunisia
- unemployed graduates (8.7% of total in Tunisia in 2000):
- stagnation of registered students in scientific and technical (23.% in Algeria against 60.7% in social sciences & humanities in 2004, 18% in Mauritania)
- Falling percentages in some countries : 15% between 1995 & 2001 in Morocco)
- Weak coopération betweeen entreprises and the research sphere
- Too rigid curricula and edagogical methodes
- Oriented towards academic rather than profesionnal and entrepreneurial performances (social passport
- Other difficulties inlcude (language, motivation of teachers, etc.)

3. Major Challenges to Innovation systems

Global Internal & external challenges specific to MCs

- Persistant level of high unemployment (youth and graduates)
- Creation of low skill jobs (low service & informal)
- Non sustainable growth,
- Poverty rural & urban etc.
- Desindustrialisation (bazar)
- High concern for the environment

- Static comparative advantages
- Numeric gap
- Innovation-based competition
- Free trade Zones
- WHO agreements
- Eviction from world strategic alliances (R&D, high tech.)

“Innovation climate” in Maghreb Countries

- Overall environment is problematic: poor transport infrastructure, governance and corruption issues, mediocre banking, high business costs
- Relatively good RD and technology infrastructure: legacy of the socialist regime, but cutting of resources by liberalization/market ideology
- No interest, money and services for technology diffusion, although crucial for poverty reduction
- Some “success stories” such as fish industry: competitive, but at what social and environmental cost?

Challenges to the industrial and the innovation system

- **structural below-capacity utilisation of existing equipment,**
- **limited forward and backwards linkages**
- **heavy cost burdens**
- **poor diversification of exports .**
- **major imbalances between education and training and economic needs**
- **The organic relationship between science, technology, the economy and politics shows several weaknesses**
- **both accumulated know how and industrial capacity are under the threat of being massively obsolete**

High potential

- Young population: higher aptitude to create, adopt, change more rapidly
- Important population of researchers, ingineers (brain-drain)
- Strong orientation and sensitivity to ICT usage
- Relatively high domestic demand growing rapidly

4. Prospects : Innovation Climate in maghreb countries

-High potential

-Numerous success stories

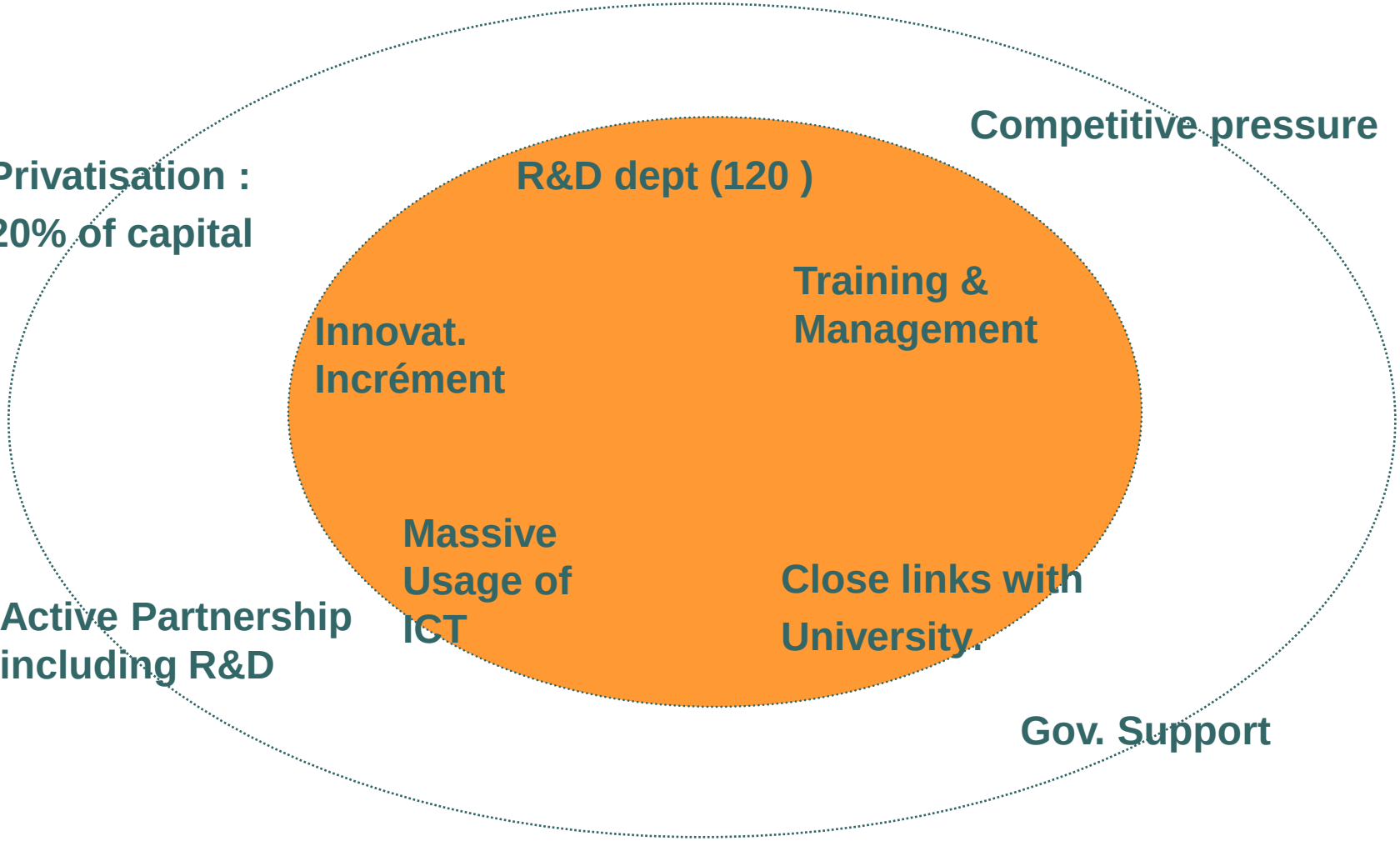
-importance of innovation climate

Sucess stories: pharmacieuticals (Public sector in Algeria)

- **PERFORMANCES**
- **New Products (10 en 2001)**
- **Market need Satisfaction from 15% to 40%**
- **Price reduction : 5%**
- **Rate of growth: 30% (2002)**
- **Position of Leader in the national market**

- **IMPACT**
- **Exports :10 Million USD en 2001**
- **Reduced imports:**
- **ISO Certification 9001/9002**
- **Job creation 21000 (98)) to 35 000 (2001)**

Internal & external elements



Importance of local “micro-climates” for innovation

- Innovation develops in well identified places (Silicon Valley, Bangalore…) where there is a critical mass of talents, knowledge, etc
- A self-dynamising process, once having taken off mobilising a set of actors from various origins: entrepreneurs, educationists, politicians, etc
- Could constitute a good alternative in MC where NSI are incomplete, imperfect and in the process of being built.

What conclusions?

- Innovation is within reach and feasible in MCs (breaking the psychological barrier)
- Importance of integrated support, delivered in package, at local and sector level,
- in building on comparative advantages and existing strengths,
- and making best use of both domestic and global knowledge

Thank you!

abdelkader.djeflat@univ-lille1.fr

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